

Preface

The use of logical modelling to study belief change is a well-established research area since more than three decades. The focus is mostly on operations that take us from a belief state in which a particular sentence is believed to one in which it is not believed, or the other way around. In the major models, these operations are based on a mechanism that can be constructed as a choice among maximally consistent sets of sentences, “possible worlds.” The development of these models has been accompanied by a critical discussion in which the resulting operations of change have been shown to have implausible properties.

This book proposes a retake for the logic of belief change. From a formal point of view, two innovations are combined to arrive at a new type of model, descriptor revision, in which the implausible properties are avoided. One of these innovations consists in basing the operation on a direct choice among potential outcomes (belief states) rather than indirectly on a choice among possible worlds or their equivalents. The other innovation is a new formal device, belief descriptors, that is used for describing the goals of a belief change. They allow us to represent a much wider array of belief changes than the incorporation or rejection of a single sentence. In combination with the new choice mechanism, they also allow us to perform all these changes in a unified way.

All formal proofs are deferred to an appendix. A list of symbols and a general index are included in order to facilitate the reader’s orientation in the book.

This book has grown out of several years of research. References are given throughout the text to previous publications where this work was reported at earlier stages. Readers wishing to compare the book to its precursors may have use for the following references to the Bibliography: Sections 4.1–4.2 [135], Sections 4.3–4.5 and 5.1–5.2 [124], Section 5.4 [130], Section 5.5 [126], Sections 6.1–6.3 and 7.2–7.3 [132], Section 7.4 [129], Section 7.5 [131], Section 8.1 [124], Section 8.2 [124, 128], Section 8.3 [132], Section 8.4 [126], Section 9.1 [124], Section 9.3 [126], Section 10.3 [134], Section 10.5 [120], and Section 10.6 [117].

I have benefitted greatly in this work from critical discussions on seminars and workshops in Stockholm, Lund, Copenhagen, Amsterdam, Schloss Dagstuhl, Munich, Nancy, A Caruña, Madeira, Pittsburgh, São Paulo, Campinas, Beijing, and

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Descriptor Revision

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